CATO'S FARM MANAGEMENT

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Eclogues from the De Re Rustica of
M. Porcius Cato, done into
English, with notes of other
excursions in the pleasant
paths of agronomic
literature.

By

A Virginia Farmer

Obscurata diu populo bonus eruet atque
Proferet in lucem speciosa vocabula rerum
Quae priscis memorata Catonibus atque Cethegis
Nunc situs informis premit et desorta vetustas.

Horati Epist. II. 2, 115.

Privately Printed
1910

PREFACE

While Cato is readily accessible in French and in German, the only recorded English translation, that of the Rev. Thos. Owen published at London in 1803, is at once inadequate and scarce. For this reason the present editor has ventured to translate from the Latin (and to annotate from the works of other ancient agronomes) those portions of the De re rustica which are of enduring interest. While this was done for the entertainment of the translator, with an echo of Horace's prayer (Sat. II, 6, 14) that everything on his farm might grow fat except his wits, it is now submitted in the hope that other American farmers may thus be afforded the pleasure of making the acquaintance of the rare old Roman, and at the same time be stimulated to more intensive agricultural practice by realizing how well such things were done two thousand years ago.

F. H.

Belvoir,
Fauquier County, Virginia
December, 1910

To Those Who May Be Interested:

Cato's Farm Management, as here presented, was translated from the Latin and privately printed in 1910 by Fairfax Harrison of Fauquier County, Virginia. Copies of Harrison's translation are exceedingly scarce and I have taken the liberty of having his work reproduced in mimeographed form.

Those of us who are interested in what Cato wrote on the subject of farm management are certainly indebted to Fairfax Harrison whose knowledge of both Latin and farm management prompted him to make this translation. We are also indebted to Professor Stanley W. Warren of Cornell University for the use of a personal copy of Harrison's translation from which this mimeographed copy was made.

V. B. Hart

Cornell University
Ithaca, New York
July 25, 1939

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NOTE UPON CATO AND THE LATIN AGRONOMES

The ancient literature of farm management was voluminous. Varro cites fifty Greek authors on the subject whose works he knew, beginning with Hesiod and Xenophon. Magon of Carthage wrote a treatise in the Punic tongue which was so highly esteemed that the Roman Senate ordered it translated into Latin, but it is now lost to us except in the literary tradition. Varro, the polymath, who was styled by his contemporary Cicero the most learned Roman, wrote a De re rustica among the six hundred and twenty books in which he explored every branch of human activity; he was indeed so prolific and so various that we might almost indulge of him the philosophic doubt, which has been expressed of a modern English litterateur, that he was not a man but a syndicate. Varro's essay in rural science, which takes the form of a pleasant exchange of experience between a company of Roman country gentlemen, acknowledges its obligation to Magon and the Greeks, as well as to Cato and was in turn the inspiration of Columella who wrote in Spain his mellifluous and charming book during the reign of Tiberius. In the IV Century Palladius followed with another De re rustica, which was diligently read during the Dark Ages, and was undoubtedly suited to them, for it is very dull. All of these works are instructive, but, like the Georgics of Virgil, they are the productions of literary men rather than practical farmers and are more profitable in the library than the barnyard: they smell more of the lamp than of the dunghill. But in the De re rustica of Cato we have a convincingly practical handbook.

Marcus Porcius Cato died one hundred and forty-nine years before the Christian era. He is usually called the Censor, to distinguish him from his great grandson of the same name, "the last republican," who committed suicide at Utica, when

"cuncta terrarum subacta
Praeter atrocem animum Catonis."

The elder Cato was the type of Roman produced by the most vigorous days of the republic. Born at Tusculum on the narrow acres which his peasant forefathers had tilled in the intervals of military service, he commenced advocate at the country assizes, followed his fortunes to Rome and there became a leader of the metropolitan bar. He saw gallant military service in Greece and in Spain, commanded an army, held all the curule offices of state and ended a contentious life in the Senate denouncing Carthage and the degeneracy of the times.

He was an upstanding man, as coarse as he was vigorous in mind and in body, much the type of Abraham Lincoln, but without Lincoln's gentleness and sympathy. He was strenuous (he too used the word) as Theodore Roosevelt in his tilts at what he considered evil, and he made as many quotable phrases in rough and tumble controversy as our recent President. Roman literature is full of anecdotes about him and his wise and witty sayings.

Unlike many men who have devoted a toilsome youth to agricultural labor, when he attained fame and fortune he maintained his interest in his farm, and wrote the De re rustica in his green old age. It tells what sort of a farm manager he himself was, and, though a mere collection of random notes, sets forth more shrewd common sense and agronomic experience than it is possible to pack into the same number of English words. It was the first book on the subject which was written in Latin; indeed, it was one of the very first books written in that vernacular at all, and it remains today of much more than antiquarian interest. In fact, we are just beginning to learn again the value of some of the things Cato practised: for example, he taught intense cultivation, the use of leguminous plants for soil improvement, the importance of live stock in a system of general farming, and the effective preservation of manure. Barring some developments of bacterial science like the ingenious "nodular hypothesis" in respect to legumes, the student of farm management today could not go far wrong if he founded modern instances of agricultural experience upon the wise saws of this sturdy old heathen.

All the subsequent Latin writers on farm management quoted Cato with respect, even when they differed from him, and no one who reads him can do less today.

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CATO'S FARM MANAGEMENT

The pursuits of commerce would be as admirable as they are profitable if they were not subject to so great risks: and so, likewise, of banking, if it was always honestly conducted. For our ancestors considered, and so ordained in their laws, that, while the thief should be cast in double damages, the usurer should make four-fold restitution. From this we may judge how much less desirable a citizen they esteemed the banker than the thief. When they sought to commend an honest man, they termed him good husbandman, good farmer. This they rated the superlative of praise.[1]

Footnote

[1] It was perhaps this encomium upon the farmer at the expense of the banker which inspired Horace's friend Alfius to withdraw his capital from his banking business and dream a delicious idyl of a simple carefree country life: but, it will be recalled (Epode II, the famous "Beatus ille qui procul negotiis") that Alfius, like many a modern amateur farmer, recruited from town, soon repented that he had ever listened to the alluring call of "back to the land" and after a few weeks of disillusion in the country, returned to town and sought to get his money out again at usury.

Columella (I, praef.) is not content with Cato's contrast of the virtue of the farmer with the iniquity of the banker, but he brings in the lawyer's profession for animadversion also. This, he says, the ancient Romans used to term a canine profession, because it consisted in barking at the rich.

Personally, I think highly of a man actively and diligently engaged in commerce, who seeks thereby to make his fortune, yet, as I have said, his career is full of risks and pitfalls. But it is from the tillers of the soil that spring the best citizens, the stanchest soldiers; and theirs are the enduring rewards which are most grateful and least envied. Such as devote themselves to that pursuit are least of all men given to evil counsels.

And now, to get to my subject, these observations will serve as preface to what I have promised to discuss.

Of Buying the Farm

(I)[2] When you have decided to purchase a farm, be careful not to buy rashly; do not spare your visits and be not content with a single tour of inspection. The more you go, the more will the place please you, if it be worth your attention. Give heed to the appearance of the neighborhood, -- a flourishing country should show its prosperity. "When you go in, look about, so that, when needs be, you can find your way out."

Footnote

[2] The Roman numerals at the beginning of the paragraphs indicate the chapters of Cato from which they are translated.

Take care that you choose a good climate, not subject to destructive storms, and a soil that is naturally strong. If possible, your farm should be at the foot of a mountain, looking to the West, in a healthy situation, where labor and cattle can be had, well watered, near a good sized town, and either on the sea or a navigable river, or else on a good and much frequented road. Choose a place which has not often changed ownership, one which is sold unwillingly, that has buildings in good repair.

Beware that you do not rashly contemn the experience of others. It is better to buy from a man who has farmed successfully and built well.[1]

Footnote

[1] This, of course, means buying at a high price, except in extraordinary cases. There is another system of agriculture which admits of the pride of making two blades of grass grow where none was before, and the profit which comes of buying cheap and selling dear. This is farming for improvement, an art which was well described two hundred years before Cato. Xenophon (Oeconomicus XX, 22) says;

"For those who are able to attend to their affairs, however, and who will apply themselves to agriculture earnestly, my father both practiced himself and taught me a most successful method of making profit for he would never allow me to buy ground already cultivated, but exhorted me to purchase such as from want of care or want of means in those who had possessed it, was left untilled and unplanted. He used to say that well cultivated land cost a great sum of money and admitted of no improvement, and he considered that land which is unsusceptible of improvement did not give the same pleasure to the owner as other land, but he thought that whatever a person had or bought up that was continually growing better afforded him the highest gratification."

When you inspect the farm, look to see how many wine presses and storage vats there are; where there are none of these you can judge what the harvest is. On the other hand, it is not the number of farming implements, but what is done with them, that counts. Where you find a few tools, it is not an expensive farm to operate. Know that with a farm, as with a man, however productive it may be, if it has the sponding habit, not much will be left over.[2]

Footnote

[2] Every rural community in the Eastern part of the United States has grown familiar with the contrast between the intelligent amateur, who, while endeavoring earnestly to set an example of good agriculture, fails to make expenses out of his land, and the born farmer who is self-supporting in the practice of methods contemned by the agricultural colleges. Too often the conclusion is drawn that scientific agriculture will not pay; but Cato puts his finger on the true reason. The man who does not depend on his land for his living too often permits his farm to get what Cato calls the "spending habit." Pliny (H. N. XVIII, 7) makes some pertinent observations on the subject:

"I may possibly appear guilty of some degree of rashness in making mention of a maxim of the ancients which will very probably be looked upon as quite incredible, 'that nothing is so disadvantageous as to cultivate land in the highest style of perfection'."

And he illustrates by the example of a Roman gentleman, who, like Arthur Young in XVIII Century England, wasted a large fortune in an attempt to bring his lands to perfect cultivation. "To cultivate land well is absolutely necessary," Pliny continues, "but to cultivate it in the very highest style is mere extravagance, unless, indeed, the work is done by the hands of a man's own family, his tenants, or those whom he is obliged to keep at any rate."

Of the Duties of the Owner

(II) When you have arrived at your country house and have saluted your household, you should make the rounds of the farm the same day, if possible; if not, then certainly the next day. When you have observed how the field work has progressed, what things have been done, and what remains undone, you should summon your overseer the next day, and should call for a report of what work has been done in good season and why it has not been possible to complete the rest, and what wine and corn and other crops have been gathered. When you are advised on these points you should make your own calculation of the time necessary for the work, if there does not appear to you to have been enough accomplished. The overseer will report that he himself has worked diligently, but that some slaves have been sick and others truant, the weather has been bad, and that it has been necessary to work the public roads. When he has given these and many other excuses, you should recall to his attention the program of work which you had laid out for him on your last visit and compare it with the results attained. If the weather has been bad, count how many stormy days there have been, and rehearse what work could have been done despite the rain, such as washing and pitching the wine vats, cleaning out the barns, sorting the grain, hauling oud and composting the manure, cleaning seed, mending the old gear and making new, mending the smocks and hoods furnished for the hands. On feast days the old ditches should be mended, the public roads worked, briers cut down, the garden dug, the meadow cleaned, the hedges trimmed and the clippings collected and burned, the fish pond cleaned out. On such days, furthermore, the slaves' rations should be cut down as compared with what is allowed when they are working in the fields in fine weather.

When this routine has been discussed quietly and with good humor and is thoroughly understood by the overseer, you should give orders for the completion of the work which has been neglected.

The accounts of money, supplies and provisions should then be considered. The overseer should report what wine and oil has been sold, what price he got, what is on hand, and what remains for sale. Security should be taken for such accounts as ought to be secured. All other unsettled matters should be agreed upon. If any thing is needed for the coming year, it should be bought; every thing which is not needed should be sold. Whatever there is for lease should be leased. Orders should be given (and take care that they

are in writing) for all work which next it is desired to have done on the farm or let to contract. You should go over the cattle and determine what is to be sold. You should sell the oil, if you can get your price, the surplus wine and corn, the old cattle, the worn out oxen, and the cull sheep, the wool and the hides, the old and sick slaves, and if any thing else is superfluous you should sell that.

The appetite of the good farmer is to sell, not to buy.

(IV) Be a good neighbor. Do not roughly give offense to your own people. If the neighborhood regards you kindly, you will find a readier market for what you have to sell, you will more easily get your work done, either on the place or by contract. If you build, your neighbors will aid you with their services, their cattle and their materials. If any misfortune should overtake you (which God forbid!) they will protect you with kindly interest.[1]

Footnote

[1] Hesiod (W. & D., 338) had already given this same advice to the Greek farmer:
"Invite the man that loves thee to a feast, but let alone thine enemy, and especially invite him that dwelleth near thee, for if, mark you, anything untoward shall have happened at home neighbours are wont to come ungirt, but kinsfolk gird themselves first."

Of Laying Out the Farm

(I) If you ask me what is the best disposition to make of your estate, I would say that should you have bought a farm of one hundred jugera (about 66 acres) all told,[1] in the best situation, it should be planted as follows: 1° a vineyard, if it promises a good yield, 2° an irrigated garden, 3° an osier bed, 4° an olive yard, 5° a meadow, 6° a corn field, 7° a wood lot, 8° a cultivated orchard, and 9° a mast grove.[2]

Footnote

[1] This was an estate of average size, probably within Virgil's precept, (Georgis II, 412.) " Laudato ingentia rura, exiguum colito." Some scholars have deemed this phrase a quotation from Cato. While it smacks of his style, the thought is found in Hesiod (W. & D., 643), "Commend a large vessel: in a small one stow thy freight."

[2] The philosophy of Cato's plan of laying out a farm is found in the agricultural history of the Romans down to the time of the Punic wars. Mommsen (II, 370) gives the facts, and Ferrero in his first chapter makes brilliant use of them. There is sketched the old peasant aristocrat living on his few acres, his decay and the creation of comparatively large estates worked by slaves in charge of overseers, which followed the conquest of the Italian states about B. C. 300. This was the civilization in which Cato had been reared, but in his time another important change was taking place. The Roman frontier was again widened by the conquest of the Mediterranean basin: the acquisition of

Sicily and Sardinia ended breadstuff farming as the staple on the Italian peninsular. The competition of the broad and fertile acres of those great Islands had the effect in Italy which the cultivation of the Dakota wheat lands had upon the grain farming of New York and Virginia. About 150 B. C. the vine and the olive became the staples of Italy and corn was superseded. Although this was not accomplished until after Cato's death he foresaw it, and recommended that a farm be laid out accordingly, and his scheme of putting one's reliance upon the vine and the olive was doubtless very advanced doctrine, when it first found expression. As to Cato's views upon the value of pasture land on a large estate (the latifundia) see post p. 52.

(III) In his youth, the farmer ought, diligently to plant his land, but he should ponder before he builds. Planting does not require reflection, but demands action. It is time enough to build when you have reached your thirty-sixth year, if you have farmed your land well meanwhile. When you do build, let your buildings be proportioned to your estate, and your estate to your buildings.[1]

Footnote

[1] Pliny quotes Cato as advising to buy what others have built rather then build oneself, and thus, as he says, enjoy the fruits of another's folly. The cacoethes edificandi is a familiar disease among country gentlemen.

It is fitting that the farm buildings should be well constructed, that you should have ample oil cellars and wine vats, and a good supply of casks, so that you can wait for high prices, something which will redound to your honour, your profit and your self-respect.

(IV) Build your dwelling house in accordance with your means. If you build well in a good situation and on a good property, and furnish the house suitably for country life, you will come there more often and more willingly.[2]

Footnote

[2] Columella (I, 4) makes the acute observation that the country house should also be agreeable to the owner's wife if he wishes to get the full measure of enjoyment out of it. Magon, the Carthaginian, advised "if you buy a farm, sell your house in town, lest you be tempted to prefer the cultivation of the urban gods to those of the country."

The farm will then be better, fewer mistakes will be made, and you will get larger crops. The face of the master is good for the land.[3]

Footnote

[3] According to German scholarship the accepted text of Cato's version of this immemorial epigram is a model of the brevity which is the test of wit, Frons occipitio prior est. Pliny, probably quoting from memory, expands it to Frons domini plus prodest quam occipitium. Palladius (I, 6) gives another version: Praesentia domini provectus est agri. It is found in some form in almost every book on agriculture since Cato; in La Maison Rustique that

delightful XVI Century thesaurus of French agricultural lore, in the innumerable works of Gervase Markham that XVII Century L. H. Bailey, and in the pleasant XIX Century essays of Donald G. Mitchell. The present editor saw it recently in the German comic paper. Fliegende Blatter. But the jest is much older than Cato. In Xenophon's Oeconomicus (XII, 20) it appears in another form:

"The reply attributed to the barbarian," added Ischomachus, "appears to me to be exceedingly to the purpose, for when the King of Persia having met with a fine horse and wishing to have it fattened as soon as possible, asked one of those who were considered knowing about horses what would fatten a horse soonest, it is said that he answered 'the master's eye.'"

(VI) Plant elm trees along the roads and fence rows, so that you may have the leaves to feed the sheep and cattle, and the timber will be available if you need it. If any where there are banks of streams or wet places, there plant reeds, and surround them with willows that the osiers may serve to tie the vines.

(VII) It is most convenient to set out the land nearest the house as an orchard, whence fire wood and faggots may be sold and the supply of the master obtained. In this enclosure should be planted everything fitting to the land and vines should be married to the trees.[1]

Footnote

[1] The English word "orchard" scarcely translates arbustum, but every one who has been in Italy will recall the endless procession of small fields of maize and rye and alfalfa through which serried ranks of feathery elm trees, linked with the charming drop and garland of the vines, seem to dance toward one in the brilliant sunlight, like so many Greek maidens on a frieze. Those are arbusta.

(VIII) Near the house lay out also a garden with garland flowers and vegetables[2] of all kinds, and set it about with myrtle hedges, both white and black, as well as Delphic and Cyprian laurel.

Footnote

[2] Cato was a strong advocate of the cabbage; he called it the best of the vegetables and urged that it be planted in every garden for health and happiness. Horace records (Odes. III, 21, 11) that old Cato's virtue was frequently warmed with wine, and Cato himself explains (CLVI) how this could be accomplished without loss of dignity, for, he says, if, after you have dined well, you will eat five cabbage leaves they will make you feel as if you had had nothing to drink, so that you can drink as much more as you wish, 'bibesque quantum voles!'

Of Stocking the Farm

(X) An olive farm of two hundred and forty jugera (160 acres) ought to be stocked as follows: an overseer, a house keeper, five laborers, three ox drivers, one swineherd, one ass driver, one shepherd; in all thirteen hands; three pair of oxen,[1] three asses with pack saddles, to haul out the manure, one other ass, and one hundred sheep.[2]

Footnote

[1] Henry Home, Lord Kames, a Scots judge of the XVIII Century, whom Dr. Johnson considered a better farmer than judge and a better judge than scholar, but who had many of the characteristics of our priscus Cato, argues in his ingenious Gentleman Farmer against the expense of ploughing with horses and urges a return to oxen. He points out that horses involve a large original investment, are worn out in farm work, and after their prime steadily depreciate in value; while, on the other hand, the ox can be fattened for market when his usefulness as a draught animal is over, and then sell for more than his original cost; that he is less subject to infirmities than the horse; can be fed per tractive unit more economically and give more valuable manure. These are strong arguments where the cost of human labor is small and economical farm management does not require that the time of the ploughman shall be limited if the unit cost of ploughing is to be reasonable. The ox is slow, but in slave times he might reasonably have been preferred to the horse. Today Lord Kames, (or even old Hesiod, who urged that a ploughman of forty year and a yoke of eight year steers be employed because they turned a more deliberate and so a better furrow) would be considering the economical practicability of the gasolene motor as tractive power for a gang of "crooked" plows.

[2] There were in addition, of course, milch goats, hogs, pigeons and fowls. Cato adds a long list of implements and other necessary equipment. Pliny quotes Cato, "whatever can be done by the help of the ass costs the least money."

Of the Duties of the Overseer[3]

Footnote

[3] The Roman overseer was usually a superior, and often a much indulged, slave. Cf. Horace's letter (Epist. I, 14) to his overseer.

(V) These are the duties of the overseer: He should maintain discipline. He should observe the feast days. He should respect the rights of others and steadfastly uphold his own. He should settle all quarrels among the hands; if any one is at fault he should administer the punishment. He should take care that no one on the place is in want, or lacks food or drink; in this respect he can afford to be generous, for he will thus more easily prevent picking and stealing.[4]

Footnote

[4] This was the traditional wisdom which was preached also in Virginia in slave times. In his Arator (1817) Col. John Taylor of Caroline says of agricultural

slaves:

"The best source for securing their happiness, their honesty and their usefulness is their food. * * * * One great value of establishing a comfortable diet for slaves is its convenience as an instrument of reward and punishment, so powerful as almost to abolish the thefts which often diminish considerably the owner's ability to provide for them."

Unless the overseer is of evil mind, he will himself do no wrong, but if he permits wrong-doing by others, the master should not suffer such indulgence to pass with impunity. He should show appreciation of courtesy, to encourage others to practice it. He should not be given to gadding or conviviality, but should be always sober. He should keep the hands busy, and should see that they do what the master has ordered. He should not think that he knows more than his master. The friends of the master should be his friends, and he should give heed to those whom the master has recommended to him. He should confine his religious practices to church on Sunday,[1] or to his own house.

Footnote

[1] "Compitalibus in compito," literally "the cross roads altar on festival days."

He should lend money to no man unbidden by the master, but what the master has lent he should collect. He should never lend any seed reserved for sowing, feed, corn, wine, or oil, but he should have relations with two or three other farms with which he can exchange things needed in emergency. He should state his accounts with his master frequently. He should not keep any hired men or day hands longer than is necessary. He should not sell anything without the knowledge of the master, nor should he conceal anything from the master. He should not have any hangers-on, nor should he consult any soothsayer, fortune teller, necromancer, or astrologer. He should not spare seed in sowing, for that is bad economy. He should strive to be expert in all kinds of farm work, and, without exhausting himself, often lend a hand. By so doing, he will better understand the point of view of his hands, and they will work more contentedly; moreover, he will have less inclination to gad, his health will be better, and he will sleep more refreshingly.

First up in the morning, he should be the last to go to bed at night; and before he does, he should see that the farm gates are closed, and that each of the hands is in his own bed, that the stock have been fed. He should see that the best of care is taken of the oxen, and should pay the highest compliments to the teamsters who keep their cattle in the best condition. He should see to it that the plows and plow shares are kept in good repair. Plan all the work in ample time, for so it is with farm work, if one thing is done late, everything will be late.

(XXXIX) When it rains try to find something to do indoors. Clean up, rather than remain idle. Remember that while work may stop, expenses still go on.

Of the Duties of the Housekeeper

(CXLIII) The overseer should be responsible for the duties of the house keeper. If the master has given her to you for a wife, you should be satisfied with her, and she should respect you. Require that she be not given to wasteful habits; that she does not gossip with the neighbors and other women. She should not receive visitors either in the kitchen or in her own quarters. She should not go out to parties, nor should she gad about.[1]

Footnote

[1] It is evident that Cato's housekeeper would have welcomed a visit from Mr. Roosevelt's Rural Uplift Commission.

She should not practise religious observances, nor should she ask others to do so for her without the permission of the master or the mistress. Remember that the master practises religion for the entire household. She should be neat in appearance and should keep the house swept and garnished. Every night before she goes to bed she should see that the hearth is swept and clean. On the Kalends, the Ides, the Nones, and on all feast days, she should hang a garland over the hearth. On those days also she should pray fervently to the household gods. She should take care that she has food cooked for you and for the hands. She should have plenty of chickens and an abundance of eggs.[2] She should diligently put up all kinds of preserves every year.

Footnote

[2] Cato is careful not to undertake to say how this may be assured; another evidence of his wisdom.

Of the Hands

(LVI) The following are the customary allowances for food: For the hands, four pecks of meal for the winter, and four and one-half for the summer. For the overseer, the house keeper, the wagoner, the shepherd three pecks each. For the slaves, four pounds of bread for the winter, but when they begin to cultivate the vines this is increased to five pounds until the figs are ripe, then return to four pounds.

(LVII) The sum of the wine allowed for each hand per annum is eight quadrantals, or Amphora, but add in the proportion as they do work. Ten quadrantals per annum is not too much to allow them to drink.

(LVIII) Save the wind fall olives as much as possible as relishes for the hands. Later set aside such of the ripe olives as will make the least oil. Be careful to make them go as far as possible. When the olives are all eaten, give them fish pickles and vinegar. One peck of salt per annum is enough for each hand.

(LIX) Allow each hand a smock and a cloak every other year. As often as you give out a smock or cloak to any one take up the old one, so that caps can be made out of it. A pair of heavy wooden shoes should be allowed every other year.

Of Draining

(XLIII) If the land is wet, it should be drained with trough shaped ditches dug three feet wide at the surface and one foot at the bottom and four feet deep. Blind these ditches with rock. If you have no rock then fill them with green willow poles braced crosswise. If you have no poles, fill them with faggots. Then dig lateral trenches three feet deep and four feed wide in such way that the water will flow from the trenches into the ditches.

(CLV) In the winter surface water should be drained off the fields. On hillsides courses should be kept clear for the water to flow off. During the rainy season at the beginning of Autumn is the greatest risk from water. When it begins to rain all the hands should go out with picks and shovels and clear out the drains so that the water may flow off into the roads, and the crops be protected.

Of Preparing the Seed Bed

(LXI) What is the first principle of good agriculture? To plow well. What is the second? To plow again; and the third is to manure. When you plow corn land, plow well and in good weather, lest you turn a cloddy furrow. The other things of good agriculture are to sow good seed[1] plentifully, to thin the young sprouts, and to hill up the roots with earth.

Footnote

[1] Seed selection, which is now preached so earnestly by the Agricultural Department of the United States as one of the things necessary to increase the yield of wheat and corn, has ever been good practice. Virgil (Georgic I, 197) mentions it: "I have seen those seeds on whose selection much time and labour had been spent, nevertheless degenerate if men did not every year rigorously separate by hand all the largest specimens."

(V) Never plow rotten land[2] nor drive flocks or carts across it.

Footnote

[2] Pliny (H. N. XVII, 3) undertakes with more rhetoric than conviction to explain this passage:

"Cato briefly, and in his peculiar manner, characterizes the defects that exist in the various soils. 'Take care,' he says, 'where the earth is rotten not to shake it either with carts or by driving cattle over it.' Now what are we to suppose that this term 'rotten' means as applied to a soil, about which he is so vastly apprehensive as to almost forbid our setting foot

upon it? Let us only form a comparison by thinking what it is that constitutes rottenness in wood and we shall find that the faults which are held by him in such aversion are the being arid, full of holes, rough, white, mouldly, worm eaten, in fact just like pumice stone: and thus has Cato said more in a single word than we could have possibly found means to express in a description however long."

One is tempted to extend this note to include Pliny's observations upon the tests of good soil if only for the sake of his description of one of the sweetest sensations of the farmer every where, the aroma of new ploughed fertile land: -

"We may in this place appropriately make mention of an opinion that has been pronounced by an Italian writer also with reference to a matter of luxury. Cicero, that other luminary of literature, has made the following remark: "Those unguents which have a taste of earth are better," says he, "than those which smack of saffron," it seeming to him more to the purpose to express himself by the word taste than smell. And such is the fact no doubt, that soil is the best which has the flavour of a perfume. If the question should be put to us, what is this odour of the earth that is held in such estimation; our answer is that it is the same that is often to be recognized at the moment of sunset without the necessity even of turning up the ground, at the spots where the extremities of the rainbow have been observed to meet the earth: as also, when after long continued drought, the rain has soaked the ground. Then it is that the earth exhales the divine odour that is so peculiarly its own, and to which, imparted to it by the sun, there is no perfume however sweet that can possibly be compared. It is this odour which the earth, when turned up, ought to emit, and which, when once found, can never deceive any person: and this will be found the best criterion for judging of the quality of the soil. Such, too, is the odour that is usually perceived in land newly cleared when an ancient forest has been just cut down; its excellence is a thing that is universally admitted."

If care is not taken about this, the land so abused will be barren for three years.

Of Manure

(V) Plan to have a big compost heap and take the best of care of the manure. When it is hauled out see that is well rotted and spread. The Autumn is the time to do this.

(XXXVII) You can make manure of litter, lupine straw, chaff, bean stalks, husks and the leaves of ilex and of oak.[1]

Footnote

[1] The ancients fully appreciated the importance of manure in any conservative system of agriculture. The Romans indeed sacrificed to Stercutus as a god. Says Pliny (H. N. XVII, 9).

"In the times of Homer even the aged king (Odyss. XXIV, 225) is represented as thus enriching the land by the labor of his own hands.

"Tradition reports that King Augeas was the first in Greece to make use

of manure, and that Hercules introduced the practice into Italy, which country has, however, immortalized the name of its King Stercutus, the son of Faunus, as claiming the honour of the invention."

To the wise farmer the myth of the Augean stables is the genesis of good agriculture.

Columella (II, 13) justly says about manure, "Wherefore if it is, as it would seem to be, the thing of the greatest value to the farmer, I consider that it should be studied with the greatest care, especially since the ancient authors, while they have not altogether neglected it, have nevertheless discussed it with too little elaboration." He goes on (II, 14) to lay down rules about the compost heap which should be written in letters of gold in every farm house.

"I appreciate that there are certain kinds of farms on which it is impossible to keep either live stock or birds, yet even in such places it is a lazy farmer who lacks manure: for he can collect leaves, rubbish from the hedge rows, and droppings from the high ways: without giving offence, and indeed earning gratitude, he can cut ferns from his neighbor's land: and all these things he can mingle with the sweepings of the courtyard: he can dig a pit, like that we have counselled for the protection of stable manure, and there mix together ashes, sewage, and straw, and indeed every waste thing which is swept up on the place. But it is wise to bury a piece of oak wood in the midst of this compost, for that will prevent venomous snakes from lurking in it. This will suffice for a farm without live stock."

One can see in Flanders today the happy land smiling its appreciation of farm management such as this, but what American farmer has yet learned this kind of conservation of his natural resources.

(XXX) Fold your sheep on the land which you are about to seed, and there feed them leaves.[1]

Footnote

[1] The occupants of the motor cars which now roll so swiftly and so comfortably along the French national highway from Paris to Tours, through the pleasant pays de Beauce, can see this admirable and economical method of manuring still in practice. The sheep are folded and fed at night, under the watchful eye of the shepherd stretched at ease in his wheeled cabin, on the land which was ploughed the day before.

Of Soil Improvement

(XXXVII) The things which are harmful to corn land are to plow the ground when it is rotten, and to plant chick peas which are harvested with the straw and are salt. Barley, fenugreek and pulse all exhaust corn land, as well as all other things which are harvested with the straw. Do not plant nut trees in the corn land. On the other hand, lupines, field beans and vetch

manure corn land.[1]

Footnote

[1] These of course are all legumes. The intelligent farmer today sits under his shade tree and meditates comfortably upon the least expensive and most profitable labor on his farm, the countless millions of beneficent bacteria who, his willing slaves, are ceaselessly at work during hot weather forming root tubercles on his legumes, be it clover or cow peas and so fixing for their lord the free atmospheric nitrogen contained in the soil. As Macaulay would say, "every school boy knows" now that leguminous root nodules are endotrophic mycorrhiza, - but the Romans did not! Nevertheless their empirical practice of soil improvement with legumes was quite as good as ours. Varro (I, 23) explains it more fully than Cato:

"Some lands are best suited for hay, some for corn, some for wine and some for oil. So also some lands are best suited for forage crops, among which are basil, succotash, vetch, alfalfa, snail clover, lupines. All things should not be sown in rich land, nor should thin land be left unsown. For it is better to sow in thin land those things which do not require much nourishment, such as snail clover and the legumes, except always chick pea (for this is a legume as are the other plants which are not reaped but from which the grain is plucked) because those things which it is the custom to pluck (legere) are called legumes. In rich land should be sown those things which require much nourishment, such as cabbage, corn, wheat and flax. Certain plants are cultivated not so much for their immediate yield of grain, as with forethought for the coming year, because cut and left lying they improve the land. So if land is too thin it is the practice to plow in, for manure, lupines not yet podded, and likewise the field bean, if it has not yet ripened so that it is fitting to harvest the beans."

Columella (II, 13), and after him Palladius (I, 6), advises that legumes be plowed in green and not merely as dry straw: he insists further that if the hay is saved the stubble of legumes should be promptly plowed, for he says the roots will evaporate their own moisture and continue to pump the land of its fertility unless they are at once turned over.

If the Romans followed this wise advice they were better farmers than most of us today, for we are usually content to let the stubble dry out before plowing.

The Romans were careful also about rotation of crops. Virgil (Georgics, I, 82) expresses the advice, "Thus, too, your land will be refreshed by changing the crops, and in the meantime there is not the unproductiveness of untilled land."

Liming as an amendment of the soil and to correct the acidity of old corn land, was apparently not practiced by the Romans in Cato's time, but it would have been most useful then as now in connection with the ploughing in of green legumes. The Romans, of course, had lime in plenty. Cato (XXXVIII), and after him Palladius (I, 10), tells how to burn limestone, but this was for masonry work. Pliny (H. N. XVII, 4) says that liming for soil improvement was known among the Transalpine Gauls: "The Aedui and the Pictores have rendered their lands remarkably fertile by the aid of lime stone, which is also found to be particularly beneficial to the olive and the vine."

The Romans did not have the fight against sour land which is the heritage

of the modern farmer after years of continuous application to his land of phosphoric and sulphuric acid in the form of mineral fertilizers. What sour land the Romans had they corrected with humus making barnyard manure, or the rich compost which Cato recommends. They had, however, a test for sourness of land which is still practiced even where the convenient litmus paper is available. Virgil (Georgics II, 241) gives the formula: "Fill a basket with soil, and strain fresh water through it. The taste of water strained through sour soil will twist awry the taster's face."

Of Planting

(XXXIV) Wherever the land is cold and wet, sow there first, and last of all in the warmest places.

(VI) Where the soil is rich and fertile, without shade, there the corn land ought to be. Where the land lies low, plant rape, millet, and panic grass.

Of Forage Crops

(VIII) If you have a water meadow you will not want forage, but if not then sow an upland meadow, so that hay may not be lacking.

(LIII) Save your hay when the time comes, and beware lest you mow too late. Mow before the seed is ripe. House the best hay by itself, so that you may feed it to the draft cattle during the spring plowing, before the clover is mature.

(XXVII) Sow, for feed for the cattle, clover, vetch, fenugreek, field beans and pulse. Sow these crops a second and a third time.[1]

Footnote

[1] Alfalfa was one of the standbys of ancient agriculture, as Arthur Young found it to be in France in the XVIII Century, and as it is all over Southern Europe today. Cato does not himself mention alfalfa, but according to Pliny it was introduced into Italy from Greece, whence it had been brought from Asia, during the Persian wars, and so derived its Roman name Medica. Varro (I,42) praises it, and Columella calls it the best of the legumes and discusses its cultivation in interesting detail. Because this plant is comparatively new in America and because so many farmers are balked by the difficulty of getting a stand of it, it is important to realize the pains which the Romans took with the seed bed, for it is on this point that most American farmers fail. Says Columella (II, 10):

"But of all the legumes, alfalfa is the best, because, when once it is sown, it lasts ten years: because it can be mowed four times, and even six times, a year: because it improves the soil: because all lean cattle grow fat by feeding upon it: because it is a remedy for sick beasts: because a jugerum (two-thirds of an acre) of it will feed three horses plentifully for a year. We will teach you the manner of cultivating it, as follows: The land which you

wish to set in alfalfa the following spring should be broken up about the Kalends of October, so that it may mellow through the entire winter. About the Kalends of February harrow it thoroughly, remove all the stones and break up the clods. Later, about the month of March, harrow it for the third time. When you have so got the land in good order, lay it off after the manner of a garden, in beds ten feet wide and fifty feet long, so that it may be possible to let in water by the paths, and access on every side may be had by the weeders. Then cover the beds with well rotted manure. At last, about the end or April, sow plentifully so that a single measure (cyanthus) of seed will cover a space ten feet long and five wide. When you have done this brush in the seed with wooden rakes: this is most important for otherwise the sprouts will be withered by the sun. After the sowing no iron tool should touch the beds: but, as I have said, they should be cultivated with wooden rakes, and in the same manner they should be weeded so that no foreign grass can choke out the young alfalfa. The first cutting should be late, when the seed begins to fall: afterwards, when it is well rooted, you can cut it as young as you wish to feed to the stock. Feed it at first sparingly, until the stock become accustomed to it, for it causes bloat and excess of blood. After cutting, irrigate the beds frequently and after a few days, when the roots begin to sprout, weed out all other kinds of grass. Cultivated in this way alfalfa can be mowed six times a year, and it will last for ten years."

Of Pastures

(L) Manure the pastures in early spring in the dark of the moon, when the west wind begins to blow. When you close your pastures (to the stock) clean them and root out all weeds.[1]

Footnote

[1]. As we have seen, Cato recommended chiefly a system of intensive farming with the vine and the olive as staples. On such a farm few live stock were kept and they were largely fed in the barnyard, so that the question of pastures was of relatively small importance. In Varro's time the feeding of large flocks of cattle and sheep had become of great importance, and with this in mind Varro (I, 7) makes one of his society of country gentlemen reply to a quotation of Cato's scheme of laying out a farm (ante p. 27):

"I know he wrote that but every one does not agree with him. There are some who put a good pasture first, and I am among them. Our ancestors were wont to call them not prata, as we do, but parata (because they are always ready for use). The aedile Caesar Vopiscus, in pleading a cause before the censors, once said that the prairie of Rosea was the nurse of Italy, because if one left his surveying instruments there on the ground over night they were lost next day in the growth of grass."

This sounds like the boast of the modern proprietor of an old blue grass sod in Northern Virginia or Kentucky.

But Cato was fully alive to the opportunity afforded by broad pastures of natural grass in an entirely different system of farming. Pliny (N. Y. XVIII, 7) tells that Cato on being asked what was the most certain source of profit in farming, replied: "Good pasture land," and second, "Pretty good pasture land." Columella (VI, i) translates this "feeding cattle," but the point of the anecdote is the same.

Of Feeding Live Stock

(XXX) As long as they are available, feed green leaves of elm, poplar, oak and fig to your cattle and sheep.

(V) Store leaves, also, to be fed to the sheep before they have withered.[1]

Footnote

[1] Was this ensilage? The ancients had their silo pits, but they used them chiefly as granaries, and as such they are described, by Varro (I, 57, 63), by Columella (I, 6), and by Pliny (XVIII, 30, 73).

(XXX) Take the best of care of your dry fodder, which you house for the winter, and remember always how long the winter may last.

(IV) Be sure you have well constructed stables furnished with substantial stalls and equipped with latticed feed racks. The intervals between the bars of the racks should be one foot. If you build them in this way, the cattle will not waste their food.

(LIV) This is the way that provender should be prepared and fed: When the seeding is finished, gather mast and soak it in water. Feed a measure of it every day to each steer; or if they have not been worked it will be sufficient to let them pasture the mast beds. Another good feed is a measure of grape husks which you shall have preserved in jars. By day turn the cattle out and at night feed twenty-five pounds of hay to each steer. If hay is short, feed the leaves of the ilex and ivy. Stack the straw of wheat, barley, beans, vetch and lupine, indeed all the grain straws, but pick out and house the best of it. Scatter your straw with salt and you can then feed it in place of hay. When in the spring you begin to feed (more heavily to prepare for work), feed a measure of mast or of grape husks, or a measure of ground lupines, and fifteen pounds of hay. When the clover is ripe, feed that first. Gather it by hand so that it will bloom a second time, for what you harvest with the sickle blooms no more. Feed clover until it is dry, then feed vetch and then panic grass, and after the panic grass feed elm leaves. If you have poplar, mix that with the elm so that the elm may last the longer. If you have no elm feed oak and fig leaves.

Nothing is more profitable than to take good care of your cattle.

Cattle should not be put out to graze except in winter when they are not worked; for when they eat green stuff they expect it all the time, and it is then necessary to muzzle them while they plow.

Of the Care of Live Stock

(V) The flocks and herds should be well supplied with litter and their feet kept clean. If litter is short, haul in oak leaves, they will serve as bedding for sheep and cattle. Beware of scab among the sheep and cattle. This comes from hunger and exposure to rain.

(LXXII) To prevent the oxen from wearing down their hoofs, anoint the bottom of the hoof with liquid pepper before driving them on the highroad.

(LXXIII) Take care that during the summer the cattle drink only sweet and fresh water. Their health depends on it.

(XCVI) To prevent scab among sheep, make a mixture of equal parts of well strained amurca,[1] of water in which lupine has been steeped, and of lees of good wine.

Footnote

[1] Amurca was the dregs of olive oil. Cato recommends its use for many purposes in the economy of the farm, for a moth proof (XCVIII), as a relish for cattle (CIII), as a fertilizer (CXXX), and as an anointment for the threshing floor to kill weevil (XCI).

After shearing, anoint all the flock with this mixture, and let them sweat profusely for two or three days. Then dip them in the sea. If you have no sea water, make salt water and dip them in that. If you will do this they will suffer no scab, they will have more and better wool and they will not be molested by ticks.

(LXXI) If an ox begins to sicken, give him without delay a raw hen's egg and make him swallow it whole. The next day make him drink from a wooden bowl a measure of wine in which has been scraped the head of an onion. Both the ox and his attendant should do these things fasting and standing upright.

(CII) If a serpent shall bite an ox, or any other quadruped, take a cup of that extract of fennel, which the physicians call smyrnean, and mix it with a measure of old wine. Inject this through his nostrils and at the same time poultice the wound with hogs' dung.[2] You can treat a man the same way.

Footnote

[2] There is a similar remedy for scratches in horses, which is traditional in the cavalry service today, and is extraordinarily efficacious.

(CLX) If a bone is dislocated it can be made sound by this incantation. Take a green reed four or five feet long, cut it in the middle and let two men hold the pieces against your hips. Begin then to chant as follows:

In Alio. S. F. Motas
Vaeta,
Daries Dardaries Astataries Dissunapiter,

and continue until the free ends of the reed are brought slowly together in front of you. Meanwhile, wave a knife above the reeds, and when they come together and one touches the other, seize them in your hand and cut them right and left. These pieces of reed bound upon a dislocated or fractured bone will cure it.

But every day repeat the incantation, or in place of it this one:

Huat Hanat Huat
Ista Pista Sista
Domiabo Damnaustra[1]

Footnote

[1] These examples will serve to illustrate how far Cato's veterinary science was behind his agriculture, and what a curious confusion of native good sense and traditional superstition there was in his method of caring for his live stock. On questions of preventing malady he had the wisdom of experience, but malady once arrived he was a simple pagan.

Of Curing Hams

(CLXII) This is the way to cure hams in jars or tubs: When you have bought your hams trim off the hocks. Take a half peck (semodius) of ground Roman salt for each ham. Cover the bottom of the jar or tub with salt and put in a ham, skin down. Cover the whole with salt and put another ham on top, and cover this in the same manner. Be careful that meat does not touch meat. So proceed, and when you have packed all the hams, cover the top with salt so that no meat can be seen, and smooth it out even. When the hams have been in salt five days, take them all out with the salt and repack them, putting those which were on top at the bottom. Cover them in the same way with salt and press them down.

After the twelfth day remove the hams finally, brush off the salt and hang them for two days in the wind. On the third day wipe them off clean with a sponge and rub them with (olive) oil. Then hang them in smoke for two days, and on the third day rub them with a mixture of (olive) oil and vinegar.

Then hang them in the meat house, and neither bats nor worms will touch them.[2]

Footnote

[2] Cato gives many recipes of household as well as agricultural economy. This one for curing hams is selected because of its intrinsic interest and for comparison with the following traditional formula as practiced in Virginia:

A Virginia Recipe for Curing Hams

"Rub each ham separately with 1/2 teaspoonful of saltpetre (use a small spoon); then rub each ham with a large tablespoonful of best black pepper; then rub each ham with a gill of molasses (black strap is best).

Then for 1,000 lbs. of ham take
$3\frac{1}{4}$ pecks of coarse salt,
$2\frac{1}{2}$ lbs. of saltpetre,
2 qts. hickory ashes,
2 qts. molasses,
2 teacupfuls of red pepper.

Mix all together on the salting table. Then rub each ham with this mixture, and, in packing, spread some of it on each layer of ham. Use no more salt than has been mixed. Pack skin down and let stand for five weeks, then hang in the smoke house for five or six weeks, and smoke in damp weather. Use hickory wood for smoking if you can possibly get it."